WHAT IS CLAIMED IS:

1. A damper mechanism for transmitting a torque while absorbing and damping torsional vibrations, comprising:

a first rotary member;

a second rotary member being rotatable relatively to said first rotary member;

a first elastic member being arranged to be compressed in response to relative rotation between said first and second rotary members;

a second elastic member being compressed in response to relative rotation between said first and second rotary members, said second elastic member having a higher rigidity than said first elastic member;

a frictional resistance generating mechanism being configured to generate a frictional resistance when said first elastic member is in a compressed state and when said second elastic member is in a compressed state; and

a frictional resistance suppressing mechanism having a rotating-direction space to prevent an operation of said frictional resistance generating mechanism in a predetermined angle range.

2. The damper mechanism according to claim 1, wherein

said frictional resistance generating mechanism and said frictional resistance suppressing mechanism are arranged to operate in parallel with said first and second elastic members in a rotational direction.

3. The damper mechanism according to claim 2, wherein

said first and second elastic members are arranged to operate in series in said rotational direction.

4. The damper mechanism according to claim 3, wherein

said frictional resistance generating mechanism operates in first regions to increase stepwise frictional resistance on opposite sides of a range of a predetermined angle, respectively, and a second region to provide a constant frictional resistance.

5. The damper mechanism according to claim 4, wherein

said frictional resistance generating mechanism generates an intermediate frictional resistance in said first region, said intermediate frictional resistance is greater than a low frictional resistance and less than a high frictional resistance said frictional resistance generating mechanism generates.

6. The damper mechanism according to claim 4, wherein

said frictional resistance generating mechanism generates a frictional resistance increasing smoothly in said first region.

7. The damper mechanism according to claim 2, wherein

said frictional resistance generating mechanism operates in first regions to increase stepwise frictional resistance on opposite sides of a range of a predetermined angle, respectively, and a second region to provide a constant frictional resistance.

8. The damper mechanism according to claim 7, wherein

said frictional resistance generating mechanism generates an intermediate frictional resistance in said first region, said intermediate frictional resistance is greater than a low frictional resistance and less than a high frictional resistance said frictional resistance generating mechanism generates.

9. The damper mechanism according to claim 8, wherein

said frictional resistance generating mechanism generates a frictional resistance increasing smoothly in said first region.

10. The damper mechanism according to claim 1, wherein

said frictional resistance generating mechanism operates in first regions to increase stepwise frictional resistance on opposite sides of a range of a predetermined angle, respectively, and a second region to provide a constant frictional resistance.

11. The damper mechanism according to claim 10, wherein

said frictional resistance generating mechanism generates an intermediate frictional resistance in said first region, said intermediate frictional resistance is greater than a low frictional resistance and less than a high frictional resistance said frictional resistance generating mechanism generates.

12. The damper mechanism according to claim 11, wherein

said frictional resistance generating mechanism generates a frictional resistance increasing smoothly in said first region.

13. A frictional resistance generating mechanism arranged between two relatively rotatable members of a rotary mechanism for generating a frictional resistance in response to relative rotation occurring between the two members by torsional vibrations to damp the torsional vibrations, said frictional resistance generating mechanism comprising:

a first frictional resistance generating portion;

a second frictional resistance generating portion generating a frictional resistance larger than that generated by said first frictional resistance generating portion;

a first frictional resistance suppressing portion having a first rotating-direction space to prevent operation of both of said first and second frictional resistance generating portions; and

a second frictional resistance suppressing portion having a second rotating-direction space to prevent operation of only said second frictional resistance generating portion on opposite sides of a torsion angle range of said first rotating-direction space.

14. A frictional resistance generating mechanism arranged between two relatively rotatable members of a rotary mechanism for generating a frictional resistance in response to relative rotation occurring between the two members by torsional vibrations to damp the torsional vibrations, said frictional resistance generating mechanism comprising:

a first frictional resistance generating portion being inoperable in a first torsion angle range and operable in second torsion angle ranges provided on opposite sides of said first torsion angle range, respectively; and a second frictional resistance generating portion being inoperable in said first and second torsion angle ranges and operable on opposite sides of said second torsion angle ranges.

15. A frictional resistance generating mechanism arranged between two relatively rotatable members of a rotary mechanism for generating a frictional resistance in response to relative rotation occurring between the two members by torsional vibrations to damp the torsional vibrations, said frictional resistance generating mechanism comprising:

a large frictional resistance generating mechanism being configured to generate a large frictional resistance;

a large frictional resistance generation suppressing mechanism having a rotating-direction space to prevent operation of said large frictional resistance generating mechanism; and

a small frictional resistance generating mechanism being configured to generate a frictional resistance being smaller than said large frictional resistance generated by said large frictional resistance generating mechanism on opposite sides of said rotating-direction space.

16. A frictional resistance generating mechanism arranged between two relatively rotatable members of a rotary mechanism for generating a frictional resistance in response to relative rotation occurring between the two members by torsional vibrations to damp the torsional vibrations, said frictional resistance generating mechanism comprising:

a first friction portion having,

a first hysteresis torque generating portion being configured to generate a first hysteresis torque, and

a first rotating-direction space arranged to operate in series with respect to said first hysteresis torque generating portion in a rotating direction; and

a second friction portion arranged in said rotating direction and between said first hysteresis torque generating portion and said first rotating-direction space having

a second hysteresis torque generating portion generating a second hysteresis torque smaller than said first hysteresis torque, and

a second rotating-direction space being arranged to operate in series with respect to said second hysteresis torque generating portion in said rotating direction.

17. A frictional resistance generating mechanism arranged between two relatively rotatable members of a rotary mechanism for generating a frictional resistance in response to relative rotation occurring between the two members by torsional vibrations to damp the torsional vibrations, said frictional resistance generating mechanism comprising:

a first friction generating portion;

a second friction generating portion arranged to operate in parallel with said first friction generating portion in the rotating direction;

a first rotating-direction space forming portion being configured to prevent operation of said first friction generating portion in an initial stage of a torsion angle; and a second rotating-direction space forming portion being configured to prevent operation of said second friction generating portion up to a predetermined torsion angle when said first friction generating portion is operating.

18. A frictional resistance generating mechanism arranged between two relatively rotatable members of a rotary mechanism for generating a frictional resistance in response to relative rotation occurring between the two members by torsional vibrations to damp the torsional vibrations, said frictional resistance generating mechanism comprising:

first, second, and third friction generating portions arranged to operate in parallel with each other in a rotating direction between said first and second rotary members;

a first rotating-direction space forming portion being configured to prevent operation of said first friction generating portion in an initial stage of a torsion angle;

a second rotating-direction space forming portion being configured to prevent operation of said second friction generating portion up to a predetermined torsion angle when said first friction generating portion is operating; and

a third rotating-direction space forming portion being configured to prevent operation of said third friction generating portion up to a predetermined torsion angle when said second friction generating portion is operating.

19. A frictional resistance generating mechanism arranged between two relatively rotatable members of a rotary mechanism for generating a frictional resistance in response to relative rotation occurring between the two members by

torsional vibrations to damp the torsional vibrations, said frictional resistance generating mechanism comprising:

a plurality of friction generating portions being arranged between said first and second rotary members to operate in parallel with each other in the rotating direction; and

a plurality of rotating-direction space forming portions being configured to delay operation of said plurality of friction portions enabling said respective friction portions to start operating successively.

20. A frictional resistance generating mechanism arranged between two relatively rotatable members of a rotary mechanism for generating a frictional resistance in response to relative rotation occurring between the two members by torsional vibrations to damp the torsional vibrations, said frictional resistance generating mechanism comprising:

a large friction generating portion; and

an intermediate friction generating portion generating an intermediate frictional resistance smaller than a frictional resistance generated by said large frictional resistance generating portion before said large friction generating portion starts operating.

21. A flywheel assembly for transmitting a torque from a crankshaft of an engine, comprising:

a flywheel having a friction surface;

an elastic coupling mechanism being configured to couple elastically said flywheel and the crankshaft in a rotating direction, and having a pair of first disk-shaped members being axially spaced from each other and fixed together, a second disk-shaped member being arranged between said pair of first disk-shaped members, and an elastic member to couple elastically said first disk-shaped members to said second disk-shaped member in said rotating direction; and

a plate-like coupling portion extending between outer peripheries of said paired first disk-shaped members, and fixing said pair of first disk-shaped members together.

22. The flywheel assembly according to claim 1, wherein

said plate-like coupling portions are arranged at a plurality of circumferentially shifted positions, respectively.

23. The flywheel assembly according to claim 22, wherein

said plate-like coupling portion has main surfaces directed radially inward and outward, respectively.

24. The flywheel assembly according to claim 23, wherein

said plate-like coupling portion extends integrally from one of said pair of first disk-shaped members.

25. The flywheel assembly according to claim 24, wherein

said second disk-shaped member is provided with a stop portion that is arranged to collide in the rotational direction with said disk-shaped member when a torsion angle between said first disk-shaped member pair and said second disk-shaped member increases.

26. The flywheel assembly according to claim 21, wherein

said plate-like coupling portion has main surfaces directed radially inward and outward, respectively.

27. The flywheel assembly according to claim 21, wherein

said plate-like coupling portion extends integrally from one of said pair of first disk-shaped members.

28. The flywheel assembly according to claim 27, wherein

said second disk-shaped member is provided with a stop portion that is arranged to collide in the rotational direction with said disk-shaped member when a torsion angle between said first disk-shaped member pair and said second disk-shaped member increases.

29. The flywheel assembly according to claim 21, wherein

said second disk-shaped member is provided with a stop portion that is arranged to collide in the rotational direction with said disk-shaped member when a torsion angle between said first disk-shaped member pair and said second disk-shaped member increases.

30. A frictional resistance generating mechanism arranged between two relatively rotatable members of a rotary mechanism for generating a frictional resistance in response to relative rotation occurring between the two members by torsional vibrations to damp the torsional vibrations, said frictional resistance generating mechanism comprising:

a first rotary member;

a second rotary member being rotatable relatively to said first rotary member;

a first intermediate member engaging with said first rotary member via a first rotating-direction space; and

a second intermediate member cooperating with said first intermediate member to form an engagement portion engaging with said first intermediate member via a second rotating-direction space, cooperating with said first intermediate member to form a first frictional resistance generating portion slidably and frictionally engaging in a rotating direction with said first intermediate member, and cooperating with said second rotary member to form a second frictional resistance generating portion slidably and frictionally engaging in said rotating direction with said second rotary member to generate a frictional resistance larger than a frictional resistance generated by said first frictional resistance generating portion.

31. The frictional resistance generating mechanism according to claim 30, wherein

said first rotating-direction space is larger than said second rotating-direction space.

32. The frictional resistance generating mechanism according to claim 31, wherein

said first and second intermediate members are disk-shaped members axially overlapping and being in contact with each other.

33. The frictional resistance generating mechanism according to claim 32, wherein

said second intermediate member is formed of a pair of members each being in contact with one of axially opposite sides of said first intermediate member, and

each of said pair of members cooperates with said first intermediate member to form said first frictional resistance generating portion therebetween, and cooperates with said second rotary member to form said second frictional resistance generating portion therebetween.

34. The frictional resistance generating mechanism according to claim 33, wherein

said first rotating-direction space is radially positioned in an area including axially overlapping portions of said first and second intermediate members.

35. The frictional resistance generating mechanism according to claim 34, wherein

said first rotary member has a disk-shaped portion axially overlapping said first intermediate member, and said first rotating-direction space is formed between said first intermediate member and said disk-shaped portion of said first rotary member.

36. The frictional resistance generating mechanism according to claim 35, wherein

one of said first intermediate member and said disk-shaped portion of said first rotary member is provided with a space extending in the rotating direction, and the other is provided with a projected portion extending axially through said space to form said first rotating-direction space.

37. The frictional resistance generating mechanism according to claim 36, wherein

said space is formed in said disk-shaped portion of said first rotary member,

said first intermediate member is formed of a pair of members arranged on axially opposite sides of said disk-shaped portion, respectively, and

one of said pair of members has said projected portion, and is unrotatably engaged with the other of said pair of member via said projected portion.

38. The frictional resistance generating mechanism according to claim 30, wherein

said first and second intermediate members are disk-shaped members axially overlapping and being in contact with each other.

39. The frictional resistance generating mechanism according to claim 38, wherein

said second intermediate member is formed of a pair of members each being in contact with one of axially opposite sides of said first intermediate member, and

each of said pair of members cooperates with said first intermediate member to form said first frictional resistance generating portion therebetween, and cooperates with said second rotary member to form said second frictional resistance generating portion therebetween.

40. The frictional resistance generating mechanism according to claim 38, wherein

said first rotating-direction space is radially positioned in an area including axially overlapping portions of said first and second intermediate members.

41. The frictional resistance generating mechanism according to claim 40, wherein

said first rotary member has a disk-shaped portion axially overlapping said first intermediate member, and

said first rotating-direction space is formed between said first intermediate member and said disk-shaped portion of said first rotary member.

42. The frictional resistance generating mechanism according to claim 41, wherein

one of said first intermediate member and said disk-shaped portion of said first rotary member is provided with a space extending in the rotating direction, and the other is provided with a projected portion extending axially through said space to form said first rotating-direction space.

43. The frictional resistance generating mechanism according to claim 42, wherein

said space is formed in said disk-shaped portion of said first rotary member,

said first intermediate member is formed of a pair of members arranged on axially opposite sides of said disk-shaped portion, respectively, and

one of said pair of members has said projected portion, and is unrotatably engaged with the other of said pair of member via said projected portion.

44. A frictional resistance generating mechanism arranged between two relatively rotatable members of a rotary mechanism for generating a frictional resistance in response to relative rotation occurring between the two members by torsional vibrations to damp the torsional vibrations, said frictional resistance generating mechanism comprising:

a first rotary member;

a second rotary member being rotatable relatively to said first rotary member;

a first intermediate member engaging with said first rotary member via a space in the first rotating-direction, and cooperating with said second rotary member to form a first friction generating portion therebetween; and a second intermediate member being arranged between said first and second rotary members to operate with respect to said first intermediate member in a rotating direction such that an end of said second intermediate member and an end of said first intermediate member exert forces on each other, engaging with said first intermediate member via a second space in the rotating-direction, and cooperating with said second rotary member to form a second friction generating portion therebetween.

45. The frictional resistance generating mechanism according to claim 44, further comprising:

a third intermediate member arranged between said first and second rotary members to operate with respect to said first and second intermediate members in the rotating direction such that an end of said third intermediate member and an end of said first and second intermediate members exert forces on each other, engaging with said second intermediate member via a third rotating-direction space, and cooperating with said second rotary member to form a third friction generating portion.

46. A frictional resistance generating mechanism arranged between two relatively rotatable members of a rotary mechanism for generating a frictional resistance in response to relative rotation occurring between the two members by torsional vibrations to damp the torsional vibrations, said frictional resistance generating mechanism comprising:

a first rotary member;

a second rotary member being rotatable relatively to said first rotary member; and a plurality of friction members arranged in a rotating direction between said first and second rotary members, each frictionally engaging with said second rotary member, and engaging with each other in the rotating direction via a rotating-direction space such that an end of one exerts force on an end of the other.